

IN THE CLAIMS:

Claim 1. (Original) A waste gas treatment system using biological treatment technology, comprising:

a dust/grease filtering device for filtering waste gas to be treated;

a directional gas flow device, having a valve, at least one gas inlet and at least two gas outlet, the at least one gas inlet connecting the dust/grease filtering device, the valve being adapted to control the waste gas to flow toward one of the at least two gas outlets;

a biological treatment system, including a top, a bottom and at least one biological reactor, the top and bottom of the biological treatment system connecting to the at least two outlets of the directional gas flow device, respectively; the at least one biological reactor being in association with one another and microorganism contained therein is adapted to be immobilized onto support; and

a bioaerosol removal device connecting to the biological treatment system.

Claim 2. (Original) The waste gas treatment system as claimed in Claim 1, wherein the filtering device has a container filled with a filler forming pores being less than 100 mesh.

Claim 3. (Original) The waste gas treatment system as claimed in Claim 1, wherein the filtering device has at least a pipeline filled with a filler forming pores being less than 100 mesh.

Claim 4. (currently amended) The waste gas treatment system as claimed in Claim 2 or 3, wherein the filler has a shape selected from one of a powder, particle and column shape.

Claim 5. (Original) The waste gas treatment system as claimed in Claim 1, wherein the valve is a manual valve.

Claim 6. (Original) The waste gas treatment system as claimed in Claim 1, wherein the valve is a semi-electric valve.

Claim 7. (Original) The waste gas treatment system as claimed in Claim 1, wherein the valve is a electric valve.

Claim 8. (Original) The waste gas treatment system as claimed in Claim 1, wherein the bioaerosol removal device is a thermal device.

Claim 9. (Original) The waste gas treatment system as claimed in Claim 1, wherein the bioaerosol removal device includes an ultraviolet light.

Claim 10. (Original) The waste gas treatment system as claimed in Claim 1, wherein the bioaerosol removal device includes a container filled with a filler being adapted to kill or inhibit microorganism.

Claim 11. (Original) The waste gas treatment system as claimed in Claim 10, wherein the filler has a shape selected from one of a powder, particle and column shape.

Claim 12. (Original) The waste gas treatment system as claimed in Claim 11, wherein the filler is made of the materials selected from one of dioxygen chloride, bleach, liquid chlorine, alcohol, acid, base, phenol, antibiotic and ahaloroamine.

Claim 13. (Original) The waste gas treatment system as claimed in Claim 1, wherein the bioaerosol removal device includes a container filled with a filler which is immersed in a solvent being adapted to kill or inhibit microorganism.

Claim 14. (Original) The waste gas treatment system as claimed in Claim 13, wherein the filler has a shape selected from one of a powder, particle and column shape.

Claim 15. (Original) The waste gas treatment system as claimed in Claim 13, wherein the filler is made of materials selected from one of zeolite, andesite, activated carbon, ferric hydroxide, activated bauxite, perlite, polystyrene, peat, ceramic and compost.

Claim 16. (Original) The waste gas treatment system as claimed in Claim 1, wherein the microorganism contained is immobilized onto the support by a measure selected from one of covalent bonding, encapsulation, crosslinking and micro-particle encapsulation.

Claim 17. (Original) The waste gas treatment system as claimed in Claim 16, wherein the microorganism contained is immobilized onto the support by covalent bonding, wherein the support is made of the materials selected from one of porous glass, ceramic, stainless steel, gravel sand, synthetic polymer and metallic oxide.

Claim 18. (Original) The waste gas treatment system as claimed in Claim 16, wherein the microorganism contained is immobilized onto the support by adsorption, wherein the support is made of the materials selected from one of activated carbon, peat, compost, bark, vermiculite, oyster shell, zeolite, andesite, activated bauxite,

pearlite, polystyrene, synthetic material, cation exchange resin and anion exchange resin.

Claim 19. (Original) The waste gas treatment system as claimed in Claim 16, wherein the microorganism contained is immobilized onto the support by encapsulation, wherein the support is made of the materials selected from one of polyacrylamide, photo-crosslinking pre-polymer, urethane pre-polymer, calcium alginate, alginate derivatives, collagen, gelatin, bovine, albumin and agar.

Claim 20. (Original) The waste gas treatment system as claimed in Claim 16, wherein the microorganism contained is immobilized onto the support by crosslinking, wherein the support is made of the materials selected from one of dimethyl-adipimide, dimethyl suberimide, aliphatic diamines and diamines.

Claim 21. (Original) The waste gas treatment system as claimed in Claim 16, wherein the microorganism contained is immobilized onto the support by encapsulation, which is selected from one of the surface polymerization, liquid surface drying, phase separation, liposome encapsulation, hollow fiber encapsulation and the like.

Claim 22. (Original) The waste gas treatment system as claimed in Claim 1, further comprising a ventilating fan disposed between the filtering device and the directional gas flow device.

Claim 23. (Original) A waste gas treatment system using biological treatment technology, comprising:

- a dust/grease filtering device for filtering waste gas to be treated;
- a biological treatment system, connecting to the dust/grease filtering device, the biological treatment system including at least one biological reactor being in association

with one another and microorganism contained therein is adapted to be immobilized onto support; and

a bioaerosol removal device connecting to the biological treatment system.

Claim 24. (Original) A waste gas treatment system using biological treatment technology, comprising:

a dust/grease filtering device for filtering waste gas to be treated;

a directional gas flow device, having a valve, at least one gas inlet and at least two gas outlet, the at least one gas inlet connecting the dust/grease filtering device, the valve being adapted to control the waste gas to flow toward one of the at least two gas outlets; and

a biological treatment system, including a top, a bottom and at least one biological reactor, the top and bottom of the biological treatment system connecting to the at least two outlets of the directional gas flow device, respectively; the at least one biological reactor being in association with one another and microorganism contained therein is adapted to be immobilized onto support.

Claim 25. (Original) A waste gas treatment process using biological treatment technology, comprising the steps of:

filtering waste gas to be treated; and

introducing the filtered waste gas into a biological treatment system periodically and switchably from two ends thereof.

Claim 26. (Original) The waste gas treatment process as claimed in Claim 25, further comprising a step of removing bioaerosol.

Claim 27. (Original) The waste gas treatment process as claimed in Claim 26, wherein the step of introducing a waste gas into a biological system is followed by the step of removing bioaerosol.

Claim 28. (Original) The waste gas treatment process as claimed in Claim 25, wherein the step of introducing a waste gas into a biological system further includes a step of forming biofilter material.

Claim 29. (Original) The waste gas treatment process as claimed in Claim 28, wherein the step of forming biofilter material has the steps of:

- propagating and culturing a certain numbers of microorganism which has capability of decomposing the waste gas;
- forming aggregate microorganism by centrifuging the cultured microorganism;
- forming a mixture by pouring the aggregated microorganism into a container having culture medium and mixing it with a support; and
- forming biofilter material having bio-film by immobilizing the mixture.

Claim 30. (Original) The waste gas treatment process as claimed in Claim 28, wherein the step of forming biofilter material has the steps of:

- propagating and culturing a certain numbers of capability of decomposing the waste gas;
- forming concentrated microorganism by concentrating the cultured microorganism;
- forming a mixture by pouring the concentrated microorganism into a container having culture medium and mixing it with a support; and
- forming biofilter material having bio-film by immobilizing the mixture.

container

Claim 31. (Original) The waste gas treatment process as claimed in Claim 28, wherein the step of forming biofilter material has the steps of:

- forming a mixture by mixing with a support species or an activated sludge which has capability of decomposing the waste gas; and
- forming biofilter material having bio-film by immobilizing the mixture.

Claim 32. (Original) The waste gas treatment process as claimed in Claim 28, wherein the step of forming biofilter material has the steps of:

- forming a first mixture in a first container by evenly mixing a medium with an isotonic solution, of which the medium includes microorganism having capability of decomposing the waste gas;

- forming a first aggregated microorganism by centrifuging the first mixture;

- forming a second mixture in a second container by evenly mixing the first aggregated microorganism with a first culture medium and a first contaminant till a certain numbers of the first contaminant being removed;

- forming a second aggregated microorganism by centrifuging the second mixture;

- forming a third mixture in a third container by evenly mixing the second aggregated microorganism with a second culture medium and a second contaminant till a certain numbers of the second contaminant being removed;

- forming a fourth mixture by repeating the above steps till no containment being can be removed and then propagating and culturing the microorganism;

- forming a third aggregated microorganism by centrifuging the fourth mixture;

- forming a fifth mixture in a fourth container by evenly mixing the third aggregated microorganism with a second isotonic solution;

- diluting the fifth mixture and inoculating it in a container having a fourth culture medium;

- forming a sixth mixture by inoculating a colony in a container having a fifth culture medium, of which the colony is picked from one having a maximum number of

identical colonies by using inoculating loops, till the sixth mixture has a number of microorganism up to  $10^7$  to  $10^{10}$  CFU/ml; and

forming the biofilter material having biofilm by placing the fourth aggregated microorganism in a container having a sixth culture medium, and adding a support therein.

Claim 33. (Original) The waste gas treatment process as claimed in Claim 28, wherein the step of forming biofilter material has the steps of:

forming a first mixture in a first container by evenly mixing a medium with an isotonic solution, of which the medium includes microorganism having capability of decomposing the waste gas;

forming a first concentrated microorganism by concentrating the first mixture; forming a second mixture in a second container by evenly mixing the first aggregated microorganism with a first culture medium and a first contaminant till a certain numbers of the first contaminant being removed;

forming a second concentrated microorganism by concentrating the second mixture;

forming a third mixture in a third container by evenly mixing the second concentrated microorganism with a second culture medium and a second contaminant till a certain numbers of the second contaminant being removed;

forming a fourth mixture by repeating the above steps till no containment being can be removed and then propagating and culturing the microorganism; forming a third concentrated microorganism by concentrating the fourth mixture;

forming a fifth mixture in a fourth container by evenly mixing the third concentrated microorganism with a second isotonic solution; medium;

forming a sixth mixture by inoculating a colony in a container having a fifth culture medium, of which the colony is picked from one having a maximum number of



identical colonies by using inoculating loops, till the sixth mixture has a number of microorganism up to  $10^7 \times 10^{10}$  CFU/ml;

forming a fourth concentrated microorganism by concentrating the sixth mixture;  
and

forming the biofilter material having biofilm by placing the fourth concentrated microorganism in a container having a sixth culture medium, and adding a support therein.

Claim 34. (New) The waste gas treatment system as claimed in Claim 3, wherein the filler has a shape selected from one of a powder, particle and column shape.